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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/014,310	12/11/2001	Ritesh P. Shah	32120-CON1	4218

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EXAMINER	
ZHENG, LOIS L	

ART UNIT	PAPER NUMBER
1742	

DATE MAILED: 09/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/014,310	SHAH ET AL.	
	Examiner	Art Unit	
	Lois Zheng	1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *32,34-36,38-40,42,43,47,49-51,53-55,57,58,61,68-75,83 and 84* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *32,34-36,38-40,42,43,47,49-51,53-55,57,58,61,68-75,83 and 84* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

1. No claim amendments are made in view applicant's response filed 22 June 2006. Therefore, 32, 34-36, 38-40, 42-43, 47, 49-51, 53-55, 57-58, 61, 68-75 and 83-84 are currently under examination.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 32, 34-36, 38-40, 42-43, 47, 49-51, 53-55, 57-58, 61 and 83-84 are rejected under 35 U.S.C. 103(a) as being unpatentable over Klose et al. DD 284,905 A5(Klose).

As stated in the previous Non-Final Office Action mailed on 4 October 2005, Klose discloses a tantalum alloy comprising 99.7-99.97 wt% of tantalum having a uniform re-crystallized texture with {100} plane parallel to the rolling plane and having an average grain size of 0.008 – 0.02 mm(i.e. 8-20μm) (abstract). Klose further discloses that the tantalum alloy is a sheet or a strip(abstract)

Regarding claims 32, 36, 38, 42-43, 47, 51, 53, 57-58 and 61, the disclosed tantalum purity of 99.7 – 99.97 wt% of Klose overlaps the claimed at least 99.95 wt% tantalum purity of the claimed invention. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed at least 99.95 wt% tantalum

purity range from the disclosed range of Klose would have been obvious to one skilled in the art since Klose teaches the same desirability in its' disclosed tantanlum purity range.

In addition, even though Klose does not explicitly teach the claimed tantalum alloy shapes such as disc(i.e. thin, circular plate) or a plate as recited in claims 32 and 47 respectively, one of ordinary skill in the art would have found the claimed disc or plate an obvious variation of the sheet or strip taught by Klose since it is well settled that the shape of the claimed tantalum alloy was a matter of choice absent persuasive evidence that the particular shape of the claimed tantalum alloy was significant. In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966). Please see MPEP 2144.04(IV).

Furthermore, Klose's teaching of an average grain size of 0.008 – 0.02 mm(i.e. 8-20μm) reads on the amended feature of average tantalum grain size of less than 50 microns. Even though Klose does not explicitly teach the claimed maximum grain size of less than 50μm, one of ordinary skill in the art would have highly expected that the tantalum grains of Klose inherent meet or overlap the claimed maximum grain size of less than 50μm as claimed since the average tantalum grain size as taught by Klose is less than half of the claimed maximum grain size of less than 50μm. More particularly, the claimed maximum grain size is 6.25 times larger than the average grain size of 0.008mm(i.e. 8 microns) in the average grain size range as taught by Klose, It is noted that applicants have not shown the criticality of "the maximum tantalum grain size of less than 50μm" in the record. Therefore, it is the examiner's position that the claimed

tantalum alloy would not be patentably distinct from Klose's tantalum alloy with the same purity, the same crystallization texture and the same average grain size.

Regarding claims 34, 40, 49 and 55 of the instant invention, even though Klose does not explicitly the claimed average grain size of the tantalum alloy of about 25μm, the average tantalum grain size of 0.02mm(i.e. 20μm) as taught by Klose is close to the about 25μm as claimed. It is well settled that a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. Titanium Metals Corp. of America v. Banner, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985). Please see MPEP 2144.05(I). In this case, since the claimed about 25μm tantalum grain sized of the instant invention is close to the 20μm grain size of Klose's tantalum alloy, one skilled in the art would have expected them to have the same properties.

Regarding claims 35, 39, 50, 54 and 70 of the instant invention, the phrase "produced from a frictionless forged billet" is construed as a process limitation. The claimed product appears to be the same or similar to that of Klose although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. Please see MPEP 2113.

Regarding claims 83-84, Klose teaches that the high purity tantalum(i.e. 99.7-99.97 % by weight of Ta) that is substantially similar to that of the claimed tantalum product(i.e. same average grain size of 8-20microns and same {100} crystallographic orientation). Therefore, one of ordinary skill in the art would have expected that the

tantalum article produced by Klose would also have a texture in which a {100} pole figure has a center peak intensity of 6.97 to 17.16 random as recited in instant claims 83-84.

4. Claims 68-75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Klose et al. DD 284,905 A5(Klose) in view of Ohhashi et al. US 5,415,829(Ohhashi).

The teachings Klose are discussed in paragraph 3 above.

Regarding claims 68-69 and 71-75, even though Klose does not explicitly teach that the tantalum material is a target, more specifically, a sputtering target as claimed, one of ordinary skill in the art would have found it obvious that the tantalum sheet(i.e. blank) of Klose can be used as a sputtering target since Ohhashi teaches that typical sputtering targets are made of tantalum and are of disc shaped plates(col. 1 lines 19-20 and 23-25).

In addition, the term "as-rolled" in instant claims 74-75 is construed as a process limitation since it describes how a tantalum target is produced. Therefore, the term "as-rolled" does not lend patentability to instant claims 74-75 without persuasive factual evidence showing the claimed process limitation materially alters the product as claimed. See MPEP 2113.

Regarding claim 70, the instant claim is rejected for the same reason as stated in the rejection of instant claims 35, 39, 50, 54 and 70 above.

Response to Arguments

5. Applicant's arguments filed 21 June 2006 have been fully considered but they are not persuasive.

In the remarks, applicant argues that the process step of Klose is significantly different than the instant invention and Klose fails to recognize the significance of the effect of the claimed processing steps on the final product grain size and distribution.

The examiner agrees with the applicant that the specific forging, rolling and annealing conditions as taught by Klose are different from the claimed forging, rolling and annealing conditions. However, differences in processing conditions do not preclude Klose's ability to form a tantalum product with uniform fine grain size and distribution. In addition, the process limitations do not lend patentability to the claims. It is well settled that a product-by-process claim defines a product, and that when the prior art discloses a product substantially the same as that being claimed, the burden falls upon the applicant to show that any process steps associated therewith results in a product materially different from that disclosed in the prior art. See In re Thorpe, (227 USPQ 964), In re Brown, (173 USPQ 685), In re Fessman, (180 USPQ 524) and MPEP 2113. Furthermore, the examiner maintains that different tantalum processes may still produces the same tantalum product as evidence by Friedman, "Grain Size Refinement in a Tantalum Ingot", Metallurgical Transactions, Vol. 2 No. 1, January 1971, pages 337-341(Friedman). Friedman teaches a different process (i.e. upset forging, followed by extrusion, followed by annealing) to produce a high purity tantalum product with maximum grain size of ASTM 5 or finer. Friedman further shows in Table IV, when annealing for 2 or 4 hours, the grain sizes both at the center and the edge of the tantalum product are less than 50 microns.

Applicant further argues that upset forging and cold rolling as taught by Klose may produce products with strain non-uniformity and large deviation in grain diameters. It is examiner's position that what "may" occur as the result of a processing step does not mean it does occur. In the contrary, Klose clearly teaches that the grain size of its tantalum product is uniform(see first full paragraph on page 5 of the translation of Klose). In absence of factual evidence data in declaration form demonstrating that a tantalum product produced by the method of Klose results in grains that are larger than the claimed 50 micron maximum, the examiner maintains the position that Klose's tantalum product either meets or, at the very least, overlap the claimed maximum grain size of 50microns.

Applicant further argues that Segal teaches problems of wide grain size distribution in tantalum, and the examiner does not provide sufficient technical reasoning to support the conclusion that Klose's tantalum necessarily has a maximum grain size of less than 50 microns.

The examiner does not find applicant's argument persuasive since Segal does not explicitly teach the specific "conventional thermo-mechanical processing techniques" or specific process(i.e. the order of processing steps and conditions) that produces non-uniform microstructures in high purity tantalum. Therefore, the examiner cannot conclude that the process as taught by Klose is a conventional thermo-mechanical process. On the contrary, Klose teaches a uniform fine grain size with average grain size of 8-20 microns in its tantalum product, which further shows that the process of Klose is not a "conventional thermo-mechanical process" as described by

Segal. Furthermore, the average grain size of 8 microns in the range of 8-20 microns as taught by Klose is significantly smaller than the claimed maximum grain size of 50 microns. In fact, the claimed maximum grain size of 50 microns is 6.25 times larger than the 8 microns average grain size as taught by Klose, which meets applicant's allegation that the maximum grain size can be many times larger than the average grain size. Therefore, the examiner maintains that even though Klose does not explicitly teach the claimed maximum grain size, the maximum grain size of Klose's tantalum product inherently meets or at the very least overlaps the claimed maximum grain size of 50 microns as claimed.

Applicant's further argument that Klose is non-analogous art is not considered persuasive by the examiner since whether or not a tantalum product used in spinnerets or sputtering targets is irrelevant as they are describing the intended use of the tantalum product. Both Klose and the instant invention are concerned with forming a high purity tantalum product with uniform (100) crystallographic orientation and fine grain size. Therefore, the examiner considers Klose as an analogous art.

Applicant also points out that paragraph 7 of the previous Non-Final Office Action does not provide support for the rejection on page 3 of the Office Action mailed 21 March 2006. The examiner apologizes for the confusion caused by not specifying the mailing date of the Office Action. "paragraph 7 of the previous Non-Final Office Action" that the examiner was referring to is paragraph 7 of the previous Non-Final Office Action mailed 4 October 2005, which is incorporated into the present Office Action as set forth in paragraph 4 above.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lois Zheng whose telephone number is (571) 272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LLZ

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